

WHAT IS CLAIMED IS:

1. A particle producing method comprising:  
introducing a carrier gas into a reaction container;  
5 heating an inside of the reaction container; and  
introducing a source gas and a reaction inhibitor  
generating gas into the reaction container.
2. The particle producing method according to claim  
10 1, wherein:  
the source gas produces particles in the reaction  
container by a thermal decomposition reaction; and  
the reaction inhibitor generating gas produces a  
inhibition component, which inhibits the thermal decomposition  
15 reaction with the particles used as a catalyst.
3. The particle producing method according to claim  
1, wherein the reaction inhibitor generating gas includes  
hydrogen and carbon dioxide.
- 20 4. The particle producing method according to claim  
1, wherein diameters of the particles are controlled in  
accordance with an amount of the reaction inhibitor generating  
gas introduced into the reaction container.

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5. The particle producing method according to claim 1, wherein the source gas includes  $\text{Fe}(\text{CO})_5$ .

6. The particle producing method according to claim 5 1, wherein the source gas includes  $\text{Co}_2(\text{CO})_8$ .

7. The particle producing method according to claim 1, wherein the source gas includes  $\text{Ni}(\text{CO})_4$ .

10 8. The particle producing method according to claim 1, wherein the carrier gas includes nitrogen.

9. The particle producing method according to claim 1, wherein the carrier gas is an inert gas.

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10. The particle producing method according to claim 1, further comprising:

determining ratio of the source gas to the reaction inhibitor generating gas in a flow rate to control an average  
20 diameter of the particles.

11. The particle producing method according to claim 1, wherein the reaction container is heated at a center part thereof in a carrier gas flowing direction.

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12. A particle producing method comprising:  
pyrolyzing a source gas to produce particles; and  
producing an inhibition component, which inhibits the  
pyrolyzing, from a reaction inhibitor generating gas with the  
5 produced particles used as a catalyst.

13. The particle producing method according to claim  
12, wherein the reaction inhibitor generating gas includes  
hydrogen and carbon dioxide.

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14. The particle producing method according to claim  
12, wherein the source gas includes  $\text{Fe}(\text{CO})_5$ .

15. The particle producing method according to claim  
15 12, wherein the source gas includes  $\text{Co}_2(\text{CO})_8$ .

16. The particle producing method according to claim  
12, wherein the source gas includes  $\text{Ni}(\text{CO})_4$ .

20 17. The particle producing method according to claim  
12, further comprising:

determining ratio of the source gas to the reaction  
inhibitor generating gas in a flow rate to control an average  
diameter of the particles.

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18. A particle producing apparatus comprising:

a reaction container;

an introduction portion provided at one end of the reaction container, the introduction portion through which a source gas,

5 a reaction inhibitor generating gas, and a carrier gas are introduced into the reaction container;

a heater provided on an outer wall of the reaction container;

an exhaust portion configured to exhaust the carrier gas  
10 and produced particles from the other end of the reaction container;

a cooler configured to cool the produced particles exhausted from the exhaust portion; and

a storage portion configured to store the produced  
15 particles from the cooler.

19. The particle producing apparatus according to claim 18, wherein the reaction inhibitor generating gas includes hydrogen and carbon dioxide.

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